

Effects of pulsed magnetic field on healing of tibial bone lesion in rabbits

T. Haghdoo Abargouei*

F. Tabeie**

F. Sahebjam***

A. Piriaei****

F. Fadaei Fathabadi****

A. Amini Afshar*****

MR. Jallili*****

*M.Sc. Student of Anatomy, School of Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran

**Associate Professor of Biophysics, School of Rehabilitation, Shahid Beheshti University of Medical Sciences, Tehran, Iran

***Veterinarian, Ophthalmic Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran

****Assistant Professor of Anatomy, School of Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran

*****Instructor of Anatomy, School of Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran

*Abstract

Background: The effects of non-invasive physical agents on wound and bone fracture healing have been considered by investigators of different medical fields. Several studies have been conducted about the effects of magnetic field on bone fracture healing.

Objective: The purpose of this study was to investigate the effects of pulsed magnetic fields on healing of tibial bone lesion in rabbits.

Methods: This experimental study was performed in Shahid Beheshti University of medical sciences in 2014. Eight New Zealand male rabbits were divided into control (with bone lesion) and experimental (with bone lesion and under pulsed magnetic field therapy) groups. A 4×10 cm bone lesion with 2 mm depth was made by surgery on both tibiae of each rabbit. One month after surgery, the rabbits in the experimental group underwent 75 Hz pulsed magnetic field therapy with 4 mT intensity in lesion site for 30 days and 4 hours a day. Forty, 50 and 60 days after surgery, bone healing was evaluated with digital radiographs and bone density was measured in lesion sites. Data were analyzed using T- test.

Findings: Mean relative bone density in lesion sites was 138.50, 150.73 and 168.30 for 8 bit grey scale in the experimental group during three consecutive imaging and showed %17.89, %15.46 and %16.59 increase in comparison with the control group.

Conclusion: With regards to the results, it seems that pulsed magnetic field therapy improves healing of bone fracture through increasing bone density in fracture site and can be used after orthopedic surgeries.

Keywords: Magnetic Field Therapy, Bone Fractures, Rabbits, Tibia

Citation: Haghdoo Abargouei T, Tabeie F, Sahebjam F, Piriaei A, Fadaei Fathabadi F, Amini Afshar A, Jallili MR. Effects of pulsed magnetic field on healing of tibial bone lesion in rabbits. J Qazvin Univ Med Sci. 2015; 19 (3): 11-17.

Corresponding Address: Faraj Tabeie, Department of Nuclear Medicine, Taleghani Hospital, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Email: tabeiefar@gmail.com

Tel: +98-21- 22432556

Received: 6 Oct 2014

Accepted: 16 Feb 2015